

WHAT IS CLAIMED IS:

- 5 1. A system for processing film comprising:
an applicator operable to coat a developer solution to the film;
a first light source operable to illuminate the coated film with a first light;
a first sensor having sensor non-uniformities, the first sensor operable to
measure the first light from an exposed and an unexposed portion of the coated film to
produce corresponding exposed image data and unexposed data; and
a processing system coupled to the first sensor and operable to determine a
first set of non-uniformity data using the unexposed data and adjusting the exposed
image data in response to the first set of non-uniformity data.
- 10 2. The system of Claim 1, wherein the processing system also operates to:
dim the first light source for at least a portion of the time that the first sensor
measures the first light from the unexposed region of the coated film;
capture a second set of unexposed data while the first light source is dimmed
to determine a second set of non-uniformity data; and
15 adjust the exposed image data obtained from the coated film in response to the
second set of non-uniformity data.
- 15 3. The system of Claim 1, wherein the first light measured by the first
sensor comprises light transmitted through the coated film.
- 20 4. The system of Claim 1, wherein the first light measured by the first
sensor comprises light reflected from the coated film.
- 25 5. The system of Claim 1, wherein the first light measured by the first
sensor comprises light reflected from and through the coated film.
6. The system of Claim 1, wherein the first light comprises infrared light.

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7. The system of Claim 1, wherein the first light comprises light within the visible portion of the electromagnetic spectrum.

8. The system of Claim 1, further comprising a second light source operable to illuminate the coated film with a second light, and the first sensor is operable to measure the second light from the coated film.

5 9. The system of Claim 8, wherein the first sensor measures the first light reflected from the film and measures the second light transmitted through the film.

10. The system of Claim 8, wherein the first light comprises visible light and the second light comprises infrared light.

10 11. The system of Claim 1, wherein the processing system operates to normalize the exposed image data.

12. The system of Claim 1, wherein the exposed image data is adjusted using a gain factor determined in response to an actual maximum pixel value derived from the measurements from the first sensor.

15 13. The system of Claim 1, wherein the system is embodied in a self service film processing kiosk.

14. A method for estimating sensor and illumination non-uniformities, comprising:

20 capturing a first plurality of readings to determine a first set of non-uniformity data from a first sensor operable to capture light reflected from film illuminated by a first light source while the film has a developer chemical applied thereto, the first sensor responsive to light reflected from an unexposed region of film; and

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adjusting image data obtained from the film in response to the first set of non-uniformity data.

15. The method of Claim 14, further comprising:

dimming the first light source for at least a portion of the time that the first

5 sensor is being used to sense the unexposed region of the film;

capturing a second plurality of readings from the first sensor while the first light source is dimmed to determine a second set of non-uniformity data; and

adjusting image data obtained from the film in response to the second set of non-uniformity data.

10 16. The method of Claim 14, wherein the first light source utilizes one of the group consisting of the infrared spectrum, the nonvisible spectrum, and the near-infrared spectrum.

15. The method of Claim 14, further comprising:

capturing a plurality of readings from each of a plurality of sensors responsive to light reflected from a plurality of unexposed regions of the film to determine additional non-uniformity data, the plurality of sensors each operable to capture light reflected from the first side of the film at a different development time of the film illuminated by at least one of the plurality of light sources; and

20 adjusting image data obtained from the film in response to the additional non-uniformity data.

18. The method of Claim 14, further comprising adjusting the image data using a gain factor determined in response to an actual maximum pixel value derived from the readings from the first sensor.

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19. The method of Claim 18, wherein the gain factor is determined by:
generating a histogram comprising an actual maximum pixel value in response
to the readings;

5 determining a set point where a quantity of the first plurality of readings
exceeds a threshold; and
determining the gain factor in response to the set point.

20. A digital image, comprising:
a computer readable medium; and
a plurality of digital pixel values residing on the computer readable medium
10 and obtained by:

capturing a first plurality of readings to determine a first set of non-uniformity
data from a first sensor operable to capture light reflected from film illuminated by a
first light source while the film has a developer chemical applied thereto, the first
sensor responsive to light reflected from an unexposed region of film; and

15 adjusting image data obtained from the film in response to the first set of non-
uniformity data to produce the digital image.

21. The method of claim 14 wherein the first plurality of readings is
captured from a dry uncoated portion of the film.

22. The method of Claim 14 where the first plurality of readings is
20 captured from a dry, uniform target other than film.

23. The method of Claim 15, wherein the second plurality of readings is
captured from a dry uniform target other than film.

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